

WHAT IS CLAIMED IS:

1. A multi-domain device, comprising:  
first and second substrates;  
5 data and gate lines on the first substrate in first and second directions to define a plurality of pixel regions;  
a pixel electrode in each pixel region, having at least one slit pattern;  
a dielectric frame within the pixel regions on the second  
10 substrate to define a plurality of domains; and  
a liquid crystal layer between the first and second substrates.
2. The device of claim 1, further comprising a TFT in a crossing portion between the data and gate lines.
3. The device of claim 1, wherein the dielectric frame is black resin.
- 20 4. The device of claim 1, wherein the dielectric frame includes a material having dielectric anisotropy equal to or smaller than that of the liquid crystal layer.
5. The device of claim 1, wherein the dielectric frame includes photoacrylate or Benzocyclobutene (BCB).
- 25 6. The device of claim 1, further comprising color filter layers and a common electrode on the second substrate.
- 30 7. The device of claim 1, further comprising a phase difference film on at least one of the first and second substrates.

8. The device of claim 1, further comprising an alignment film on at least one of the first and second substrates.

9. The device of claim 1, wherein the liquid crystal layer includes a chiral dopant.

10. A multi-domain device, comprising:

first and second substrates;

data and gate lines on the first substrate in first and second directions to define a plurality of pixel regions;

a pixel electrode in each pixel region, the pixel electrode having a plurality of holes;

a dielectric frame within the pixel regions on the second substrate to define a plurality of domains; and

a liquid crystal layer between the first and second substrates.

11. The device of claim 10, wherein the dielectric frame is black resin.

12. The device of claim 10, wherein the dielectric frame includes photoacrylate or benzocyclobutene (BCB).

13. The device of claim 10, further comprising a phase difference film on at least one of the first and second substrates.

14. The device of claim 10, further comprising an alignment film on at least one of the first and second substrates.

15. The device of claim 10, wherein the liquid crystal layer includes a chiral dopant.

16. A multi-domain liquid crystal display device, comprising:  
first and second substrates;

data and gate lines on the first substrate in first and  
second directions to define a plurality of pixel regions;

5 a U shaped TFT at a crossing portion of the data and gate  
lines;

a pixel electrode in each pixel region having a plurality  
of holes or slit patterns;

10 a dielectric frame within the pixel regions on the second  
substrate to define a plurality of domains; and

a liquid crystal layer between the first and second  
substrates.

17. The device of claim 16, wherein the dielectric frame is  
15 black resin.

18. The device of claim 16, wherein the dielectric frame  
includes photoacrylate or benzocyclobutene (BCB).

20 19. The device of claim 16, wherein the TFT includes:  
a gate electrode on the first substrate;  
a gate insulating film on the first substrate;  
a semiconductor layer and an ohmic contact layer on the  
gate insulating film; and

25 a drain electrode on the ohmic contact layer and a source  
electrode surrounding the drain electrode in a U shape.

20. The device of claim 16, wherein the liquid crystal layer  
includes a chiral dopant.

30 21. A method for manufacturing a multi-domain liquid crystal  
display device comprising:

forming gate and data lines on a first substrate, the data lines being formed to cross the gate lines;

forming a passivation film on the first substrate;

forming a transparent conductive film on the passivation  
5 film;

patterning the transparent conductive film to form a pixel electrode having at least one slit in a pixel region defined by the gate and data lines;

forming a dielectric frame within the pixel region to  
10 define a plurality of domains, the dielectric frame on a second substrate opposite to the first substrate; and

forming a liquid crystal layer between the first and second substrates.

15 22. The method of claim 21, wherein the step of forming the pixel electrode includes the step of patterning the transparent conductive film using a mask provided with at least one slit.

20 23. The method of claim 21, wherein the slits are formed in different directions within each domain as the plurality of domains are defined.

24. The method of claim 21, wherein the dielectric frame is formed of black resin.

25 25. The method of claim 21, wherein the dielectric frame includes photoacrylate or benzocyclobutene (BCB).

30 26. The method of claim 21, wherein the step of forming the liquid crystal layer includes:

forming a sealing pattern on the first substrate;

selectively dropping a liquid crystal within the sealing pattern;

distributing a spacer on the second substrate;  
attaching the first and second substrate to each other; and  
hardening the sealing pattern by ultraviolet light.

5 27. The method of claim 21, wherein the liquid crystal layer includes a chiral dopant.

28. A method for manufacturing a multi-domain liquid crystal display device comprising:

10 forming gate and data lines on a first substrate, the data lines being formed to cross the gate lines;

forming a passivation film on the first substrate;

forming a transparent conductive film on the passivation film;

15 patterning the transparent conductive film to form a pixel electrode having at least one hole in a pixel region defined by the gate and data lines;

20 forming a dielectric frame within the pixel region to define a plurality of domains, the dielectric frame on a second substrate opposite to the first substrate; and

forming a liquid crystal layer between the first and second substrates.

25 29. The method of claim 28, wherein the step of forming the pixel electrode includes patterning the transparent conductive film using a mask provided with at least one hole.

30 30. The method of claim 28, wherein the dielectric frame is formed of black resin.

31. The method of claim 28, wherein the dielectric frame includes photoacrylate or benzocyclobutene (BCB).

32. The method of claim 28, wherein the step of forming the liquid crystal layer includes:

forming a sealing pattern on the first substrate;

5 selectively dropping a liquid crystal within the sealing pattern;

distributing a spacer on the second substrate;

attaching the first and second substrate to each other; and

hardening the sealing pattern by ultraviolet light.

10 33. The method of claim 28, wherein the liquid crystal layer includes a chiral dopant.

34. A method for manufacturing a multi-domain liquid crystal display device comprising:

forming a TFT on a first substrate;

forming a pixel electrode having a plurality of holes or slits on an entire surface including the TFT;

forming a dielectric frame within the pixel electrode to define a plurality of domains, the dielectric frame on a second substrate opposite to the first substrate; and

forming a liquid crystal layer between the first and second substrates.

25 35. The method of claim 34, wherein the step of forming the TFT includes:

forming a gate electrode on the first substrate;

forming a gate insulating film on the first substrate;

forming a semiconductor layer and an ohmic contact layer on the gate insulating film; and

forming a drain electrode on the ohmic contact layer and a source electrode surrounding the drain electrode in a U shape.

36. The method of claim 34, wherein the dielectric frame is formed of black resin.

37. The method of claim 34, wherein the dielectric frame includes photoacrylate or benzocyclobutene (BCB).

38. The method of claim 34, wherein the step of forming the liquid crystal layer includes:

forming a sealing pattern on the first substrate;  
selectively dropping a liquid crystal within the sealing pattern;  
distributing a spacer on the second substrate;  
attaching the first and second substrate to each other; and  
hardening the sealing pattern by ultraviolet light.

39. The method of claim 34, further comprising forming a first electrode and a second electrode on the first substrate, the first and second electrodes forming a storage capacitor.

40. The method of claim 39, wherein the pixel electrode is electrically connected with the second electrode of the storage capacitor.

41. The method of claim 39, wherein the first electrode is formed with the gate electrode.

42. The method of claim 39, wherein the step of forming the TFT includes:

forming a gate electrode on the first substrate;  
forming a gate insulating film on the first substrate;  
forming a semiconductor layer and an ohmic contact layer on the gate insulating film;

forming a drain electrode on the ohmic contact layer and a source electrode surrounding the drain electrode in a U shape; and

wherein the second electrode is formed with the source and  
5 drain electrodes.

43. The method of claim 34, wherein the liquid crystal layer includes a chiral dopant.

FOUO "SECRET"